Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of:

Mitigation of Orbital Debris in the New Space Age	)))	IB Docket No. 18-313

To: The Commission

COMMENTS OF ARRL, THE NATIONAL ASSOCIATION FOR AMATEUR RADIO

ARRL, The national association for Amateur Radio ("ARRL" or "League"), hereby submits Comments on the Commission's Further Notice of Proposed Rulemaking ("FNPRM") in the above-captioned proceeding.[1] In the earlier phase of this proceeding the League submitted comments and met with Commission staff to discuss the Commission's proposed rules.[2] We appreciate that the Commission has provided this opportunity to further explore the difficult issues related to indemnification and maneuverability before reaching final decisions.

BACKGROUND

Radio amateurs have been active in space activities from the very beginning of the "space age," when many amateurs tuned in the signals of Sputnik 1 in the Fall of 1957. There followed the first orbiting satellite carrying amateur radio, OSCAR 1, just four years later in 1961. Since that time radio amateurs have compiled an enviable record of space successes and "firsts" while contributing to the national interest by providing the means to develop the interests and capabilities of students and scientists. Radio amateur satellite efforts spread around the world from the United States, and today the Radio Amateur Satellite Service is a worldwide endeavor recognized and encouraged by many countries.

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[1] *See* Report and Order and Further Notice of Proposed Rulemaking, IB Docket No. 18-313, 35 FCC Rcd 4156 (2020).

[2] *See* Comments of ARRL, The national association for Amateur Radio, IB Docket No. 18-313, filed April 5, 2019 ("Comments"); Notice of *Ex Parte* Presentation, IB Docket No. 18-313, filed April 9, 2020 (ARRL and the Radio Amateur Satellite Corporation [AMSAT]) ("Notice").

Expertise with space-related technologies and communications attracts interest from students and provides them the means to develop their interest in space and in the associated wireless communications that both control and use spacecraft. The design, development, and building of radio amateur satellites are almost exclusively funded by volunteer donations of time, material, and fundraising by the volunteers themselves.

Development of space-related expertise is of great benefit to the United States. We urge the Commission to preserve and expand the means by which it can provide a means for these and other STEM-related activities to grow and prosper when it considers its rules and policies in this proceeding. It is through these activities that many in the next generation of space scientists and engineers will be attracted to the field and develop their interests and expertise in an area critical to our country's future. It is therefore essential that policy-makers work to find ways to encourage these volunteer activities, rather than (perhaps inadvertently) constructing roadblocks.

With the benefits of these activities in mind, the ARRL below addresses two such potential roadblocks: indemnification and maneuverability.

INDEMNIFICATION

The proposed indemnification requirement, if applied to amateur satellite service stations, may preclude operation of amateur space stations by university groups and others. Radio amateurs – and AMSAT in particular – often work with university groups on payloads for their amateur satellite projects. As addressed in our comments in the earlier phase of this proceeding,[3] as a practical matter such a requirement would seriously impair the ability of amateur and university experimenters to launch and operate satellites under U.S. auspices because of the potential liability and high insurance cost. We noted in particular that an analogous requirement in the United Kingdom seriously impaired the amateur satellite program in that country.

Academic researchers in aerospace engineering, space science, and related fields at 23 leading universities have urged the Commission to consider the negative impacts that such requirements would have on university programs. "The requirement would effectively preclude a large proportion of academic SmallSat missions because public universities typically cannot legally enter into indemnification arrangements…. In our experience, most state institutions … have restrictions or outright prohibitions against indemnification because they are subject to governmental immunity."[4]

We appreciate the Commission will consider a modification to its original proposal with regard to Part 97 amateur satellite service licensees to allow the owner of an amateur space station to provide an indemnification (rather than the licensee) if an indemnification requirement is adopted.[5] The owner of a satellite station for purposes of the amateur Part 97 rules should be identified in the application; any change in ownership required to be notified to the Commission; and if an indemnification requirement is adopted, the new owner required to confirm the indemnification requirement or submit a replacement. The ownership change could be permitted to take effect 30 days after submission to the FCC, allowing time for any questions to be raised and answered to the satisfaction of Commission staff.

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[3] *See* Comments, *supra* note 2.

[4] *See Ex Parte* letter from University Small Satellite Researchers submitted on behalf of 24 named university professors, IB Docket No. 18-313 (filed on April 13, 2020).

[5] *See* Notice, *supra* note 2.

MANEUVERABILITY/PROPULSION

The Commission’s proposal to require that all space stations deployed in low-Earth orbits higher than 400 kilometers have the ability to maneuver is understandable as a general requirement, but we urge that an exception be made for a limited number of amateur and similar experimental satellites that are (1) below a specified size (such as no more than 36 cm X 24 cm X 12 cm and 12 kg in mass) and (2) stand-alone, or in a constellation numbering no more than 4 or 5 individual satellites. This would accommodate the types of small satellites most often used for experimental purposes by radio amateurs in Part 97 service and university experimenters in Part 5 service. Such satellites are small in number, have limited to no capacity to implement maneuverability using current technology due to their small size, yet provide important platforms for valuable experimentation and student experience.

The 400-kilometer low-Earth orbit limit itself also deserves close scrutiny, given that satellites put into orbit from the ISS and ISS service vehicles often are in higher orbits than that but share the same characteristics as those that orbit below 400 kilometers. So long as such vehicles are shown to pose no risk to the ISS and will return to earth within the specified time limit, continuing to allow such vehicles up to a more reasonable height, at least the limited number used for amateur and experimental purposes, would preserve the advantages that they bring in education and innovation.

CONCLUSION

There is great public value to ensuring that radio amateur small satellite experimenters and university researchers are not impaired in their work to further space technology. Radio amateurs often work in conjunction with university programs engaged in similar and complementary projects. We urge the Commission to consider the unique characteristics of

Amateur satellites and adjust its proposed rules accordingly. Reasonable accommodation, rather than treating small experimenters and researchers the same as large corporate entities with tens and hundreds of satellites, is warranted by the facts and by the realities of the dangers being addressed by the proposed rules.

Respectfully submitted,

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